

National Grid SA-CO **PRODUCTION FILE**

Contractor : ABB Contracting Co.

Project : SS 8709- 132/13.8kV in Alkha

Contract No : 11131113/00

Substation : 8709

**Subject : 132Kv Busbar Protection Set-
Relay Panel-3**

ABB



POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company
CLIENT : National GridSA
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : Assembly Drawing - +BBP2-3
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

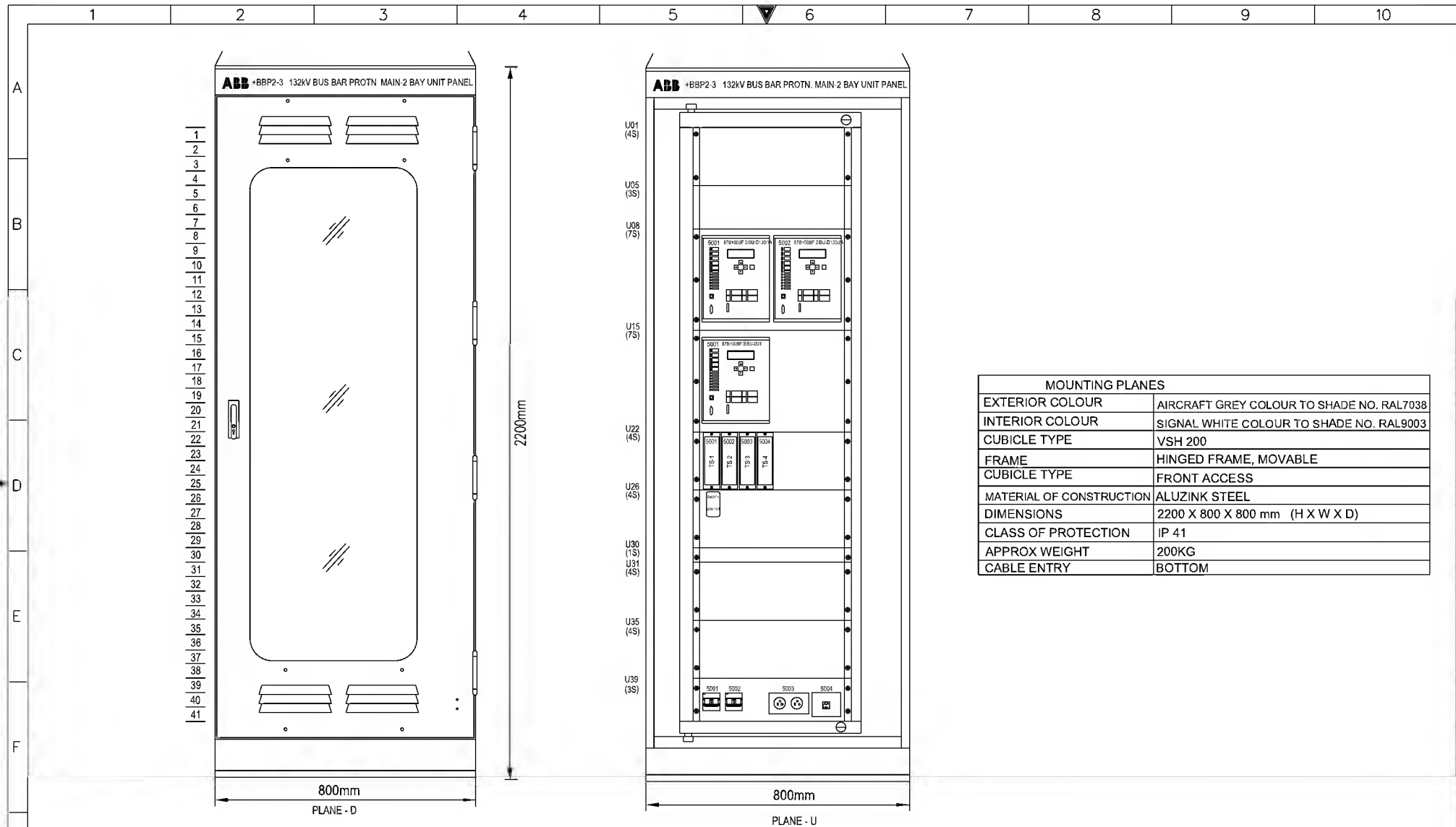
الشركة الوطنية لنقل الكهرباء



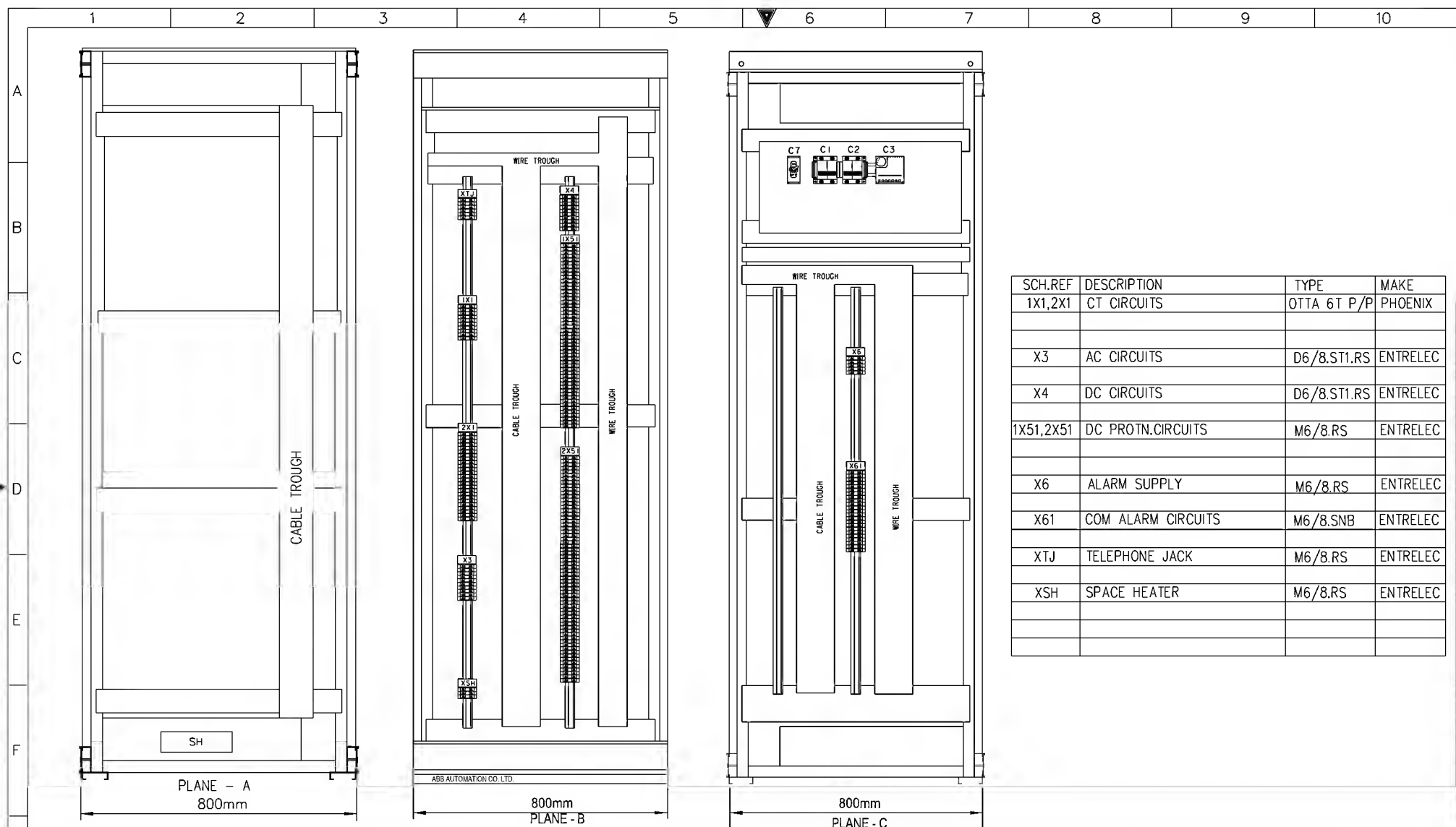
نقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323004	SHT 001	01

NG/D2-D (2012/01)
DMS VECTOR NGD200



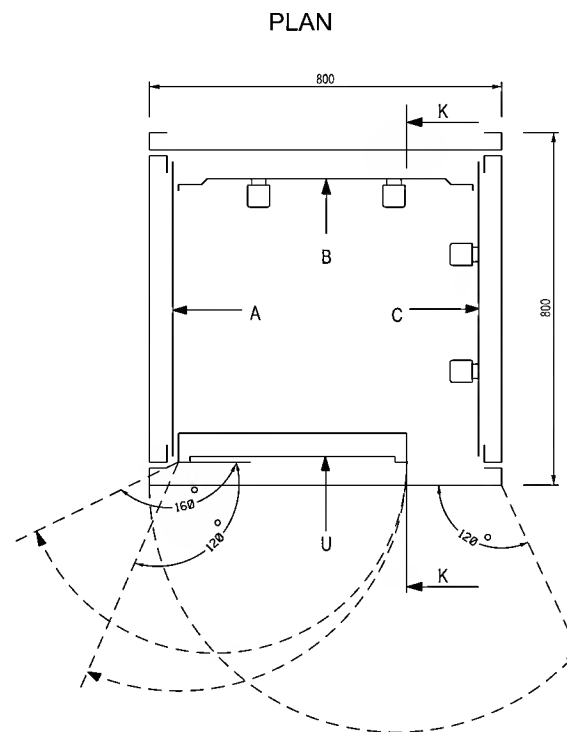
AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01 13 49		FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		National Grid sa	
00 13 05		FOR APPROVAL		DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
REV. NO. DATE DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421 CD-323004		001 002 01	
								NG/D2-D (2012/01)	
								DMS VECTOR NGD200	



SCH.REF	DESCRIPTION	TYPE	MAKE
1X1,2X1	CT CIRCUITS	OTTA 6T P/P	PHOENIX
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
1X51,2X51	DC PROT.N.CIRCUITS	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	COM ALARM CIRCUITS	M6/8.SNB	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01 13 49			DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		INDEX		PLANT NO.	
00 13 05			DATE STARTED 30.01.2013		DATE COMPLETED		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.	
REV. NO.			DATE		DESCRIPTION		PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		SHT CONT.	
							RIYADH		SAUDI ARABIA		G02 G03	
											01	

NG/D2-D (2012/01)
DMS VECTOR NGD200



NG/D2-D (2012/01)

DMS	VECTOR	NGD200
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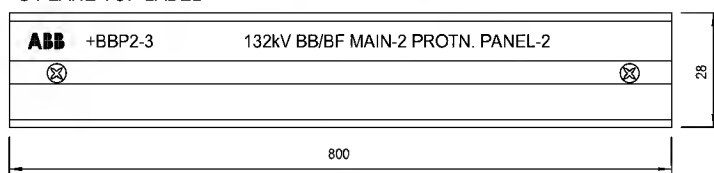
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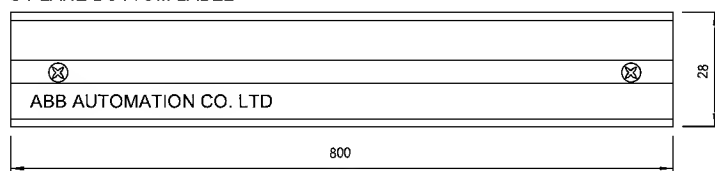


TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL



U PLANE BOTTOM LABEL



MANUFACTURING LABEL

ABB ABB Automation Co.Ltd.	
PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE:	2013
PANEL NO. :	+BBP2-3
DRAWING NO. :	S13656-CD-3230C5
MADE IN THE KINGDOM OF SAUDI ARABIA	

G

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ CHECKED BY KVR
00	13 05		DATE STARTED 30.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323004	G04 L00	01

NG/D2-D (2012/01)
DMS VECTOR NGD200



POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company
CLIENT : National Gridsa
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : LIST OF APPARATUS - +BBP2-3
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323004	SHT L00	01

NG/D2-D (2012/01)

DMS VECTOR NGD200

	1	2	3	4	5	6	7	8	9	10
A	SR. NO.	GA. REF.	SCH. REF.	DESCRIPTION		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	1	U08.5001	87B+50BF-2/BU-D130/1A	RELAY CUBICLE- +BBP2-3 FOR 132KV BB/BF MAIN-2 ACCOMODATING THE FOLLOWING			3	VSH 200	ABB	
		U08.5002	87B+50BF-2/BU-D130/2A	BAY UNIT FOR NUMERICAL BUSBAR PROTECTION WITH FOLLOWING		295,296		7SS523	SIEMENS	7SS5231-5CA01+1AA1
				HIGH TROUGH-FAULT STABILITY EVEN IN CASE OF CT SATURATION.		297,298				
				NEUTRAL CURRENT CRITERION INSTANTANEOUS VALUES FOR FAULT RECORDING.						
		U15.5001	87B+50BF-2/BU-D01	DISTURBANCE FREE AND FAST DATA TRANSFER TO & FROM CENTRAL UNIT		293,294				
				PHASE SEGRAGATED MEASUREMENT						
				REDUCE CT PERFORMANCE REQUIREMENTS						
				BUILT IN HUMAN MACHINE INTERFACE						
				BUILT IN BREAKER FAILURE FUNCTION.						
B				END FAULT PROTECTION FUNCTION						
				DISTURBANCE RECORDER						
				BINARY OUTPUT : 20						
				BINARY OUTPUT : 6+2-WD						
				FULLY NUMERICAL SIGNAL PROCESSING						
				RATED CURRENT : 1A						
				AUX. VOLTAGE : 60-250V DC						
				RATED FREQUENCY : 60HZ						
C	2	U22.5001	TS-1	TEST SWITCH FOR 87B+50BF-2/BU-D01 RELAY		293	3	MMLG02	ALSTOM	MMLG02 R1AA 0001D
		U22.5002	TS-2	TEST SWITCH FOR 87B+50BF-2/BU-D130/1A RELAY		295				
		U22.5003	TS-3	TEST SWITCH FOR 87B+50BF-2/BU-D130/2A RELAY		297				
	3	U26.101	74BF-2/BU-D01	DUAL TARGET RELAY FOR 87B+50BF-2/D01AND 87B+50BF-2/D130 DC SUPERVISION		232	1	RXSF 1	ABB	RK 271 019-AN
			/74BF-2/BU-D130	AUXILIARY VOLTAGE : 110-125V DC		237				
				CONTACT DATA : 1NO + 2NC						
				FLAG : SELF RESET,REVERSE						
D										
E										
F										


AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		INDEX		PLANT NO.	DRAWING NUMBER
00	13 05	FOR APPROVAL		DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		SHEET NO.		REV. NO.	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		L01		L02	
								-		C421	
								CD-323004		01	

NG/D2-D (2012/01)	
DMS	VECTOR
NGD200	

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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		<div> <div>  <div> <div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid SA</div> </div> </div> </div>			
DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>			DATE STARTED <u>30.01.2013</u> DATE COMPLETED _____		<div> <div>LIST OF APPARATUS</div> <div>132KV BUSBAR PROT.N.MAIN-2 BU PANEL +BBP2-3</div> <div>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</div> <div>RIYADH SAUDI ARABIA</div> </div>					
<div> <div>01</div> <div>13 49</div> <div>FACTORY ASBUILT</div> </div>			OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		<div> <div>INDEX</div> <div>PLANT NO.</div> <div>DRAWING NUMBER</div> <div>SHEET NO.</div> <div>SHT. CONT.</div> <div>REV. NO.</div> </div>					
<div> <div>00</div> <div>13 05</div> <div>FOR APPROVAL</div> </div>					<div> <div>-</div> <div>C421</div> <div>CD-323004</div> <div>L02</div> <div>L03</div> <div>01</div> </div>					

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LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U08.5001	U08.5001 878+50BF-2/BU-D130/1A	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U08.5002	U08.5002 878+50BF-2/BU-0130/2A	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U15.5001	U15.5001 878+50BF-2/BU-001	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U22.5001	U22.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U22.5002	U22.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U22.5003	U22.5003 TS-3	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U26.101	U26.101 74BF-2/D130	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U39.5001	U39.5001 DC SUPPLY MCB FOR D01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5002	U39.5002 DC SUPPLY MCB FOR D130	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5003	U39.5003 C01-127V,C02-220V	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5004	U39.5004 TJ	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		<div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>  <div>نقل الكهرباء</div> <div>National Grid sa</div> </div> </div>	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3	
00	13 05	FOR APPROVAL		DATE STARTED 30.01.2013	DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	INDEX	PLANT NO.
						-	C421
							CD-323004
							<div> <div>SHEET NO.</div> <div>SHT CONT </div> </div>
							<div> <div>REV. NO.</div> <div>01</div> </div>

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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		INDEX	PLANT NO.
00	13 05	FOR APPROVAL		DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		CD-323004	L05 NIL
								REV. NO.	01

NG/D2-D (2012/01)
DMS VECTOR NGD200

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POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company
CLIENT : National GridsA
PROJECT : CONSTRUCTION OF NEW 132/13.8kv SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : SCHEMATICS DRAWINGS - +BBP2-3
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY	-	C421	CD-323005	SHT CONT.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH	SAUDI ARABIA			01


NG/D2-D (2012/01)
DMS VECTOR NGD200

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	<table><tr><th>SYMBOL</th><th>DESCRIPTION</th><th>SYMBOL</th><th>DESCRIPTION</th><th>SYMBOL</th><th>DESCRIPTION</th></tr><tr><td></td><td>FRAME CONNECTION</td><td></td><td>MAIN CONTACT OF A CIRCUIT BREAKER</td><td></td><td>RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING</td></tr><tr><td></td><td>EARTH CONNECTION</td><td></td><td>PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE</td><td></td><td>RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS</td></tr><tr><td></td><td>RESISTOR</td><td></td><td>BREAK CONTACT DELAYED WHEN OPERATING</td><td></td><td></td></tr><tr><td></td><td>VARIABLE RESISTOR</td><td></td><td>MAKE CONTACT DELAYED WHEN RELEASING</td><td></td><td>SIGNALLING LAMP</td></tr><tr><td></td><td>RESISTOR WITH PRESET ADJUSTMENT</td><td></td><td>TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION</td><td></td><td>MECHANICAL INDICATOR WITH AUTOMATIC RESET</td></tr><tr><td></td><td>CAPACITOR</td><td></td><td>JUNCTION OF MECHANICAL LINKS</td><td></td><td>MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET</td></tr><tr><td></td><td>SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE</td><td></td><td>AUTOMATIC RESET</td><td></td><td>ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET</td></tr><tr><td></td><td>OPEN CONTACT, MAKE CONTACT</td><td></td><td>NON-AUTOMATIC RESET</td><td></td><td>ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET</td></tr><tr><td></td><td>CLOSED CONTACT, BREAK CONTACT</td><td></td><td>SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET</td><td></td><td>RELAY WITH MECHANICAL INDICATOR</td></tr><tr><td></td><td>CHANGE-OVER CONTACT, BREAK BEFORE MAKE</td><td></td><td>SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET</td><td></td><td>ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION</td></tr><tr><td></td><td>MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING</td><td></td><td>CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL</td><td></td><td>ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITION</td></tr><tr><td></td><td>BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING</td><td></td><td>RELAY WITH MAKE CONTACT</td><td></td><td>BELL, BUZZER</td></tr><tr><td></td><td>SWITCHING DEVICE WITH MANUAL CONTROL</td><td></td><td>RELAY WITH CHANGE-OVER CONTACT</td><td></td><td>SIREN , HORN</td></tr><tr><td></td><td>MAKE CONTACT DELAYED WHEN OPERATING</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING</td><td></td><td></td></tr><tr><td></td><td>BREAK CONTACT DELAYED WHEN RELEASING</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING</td><td></td><td></td></tr><tr><td></td><td>MAIN CONTACT OF A SWITCH DISCONNECTOR</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING</td><td></td><td></td></tr><tr><td></td><td>MAIN CONTACT OF A DISCONNECTOR</td><td></td><td></td><td></td><td></td></tr></table>										SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION		FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING		EARTH CONNECTION		PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS		RESISTOR		BREAK CONTACT DELAYED WHEN OPERATING				VARIABLE RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		SIGNALLING LAMP		RESISTOR WITH PRESET ADJUSTMENT		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		MECHANICAL INDICATOR WITH AUTOMATIC RESET		CAPACITOR		JUNCTION OF MECHANICAL LINKS		MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET		SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET		OPEN CONTACT, MAKE CONTACT		NON-AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET		CLOSED CONTACT, BREAK CONTACT		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		RELAY WITH MECHANICAL INDICATOR		CHANGE-OVER CONTACT, BREAK BEFORE MAKE		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION		MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITION		BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING		RELAY WITH MAKE CONTACT		BELL, BUZZER		SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH CHANGE-OVER CONTACT		SIREN , HORN		MAKE CONTACT DELAYED WHEN OPERATING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING				BREAK CONTACT DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING				MAIN CONTACT OF A SWITCH DISCONNECTOR		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING				MAIN CONTACT OF A DISCONNECTOR				
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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		INDEX		PLANT NO.	DRAWING NUMBER
00	13 05	FOR APPROVAL		DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		-		C421	CD-323005
REV. NO.	DATE	DESCRIPTION		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		SHEET NO.		SHT	CDT
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NG/D2-0 (2012/01)											
DMS VECTOR NGD200											

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AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS				نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa			
G	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3							
	00	13 05	FOR APPROVAL		DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY							
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							



INDEX		PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
		C421	CD-323005		SHT 012 CONT. 013		01
							NG/D2-D (2012/01)
DMS		VECTOR		NGD200			

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C										
D										
E										
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LEGENDS

±R1	DC SUPPLY - MAIN PROTECTION
±R2	DC SUPPLY - SECONDARY PROTECTION
±R3	DC SUPPLY - BACK UP PROTECTION
±IT	DC SUPPLY - INTER TRIP
FL	DC SUPPLY - FLASHING CIRCUIT
BB RS±	DC SUPPLY - BUS BAR - PROTECTION RESET
BB CBF±/CBF±	DC SUPPLY - CBF PROTECTION
R	RESET BUS - ALARM SYSTEM
CR	CONTROL ROOM
ECC	ENERGY CONTROL CENTRE
LOCAL	THE LOCATION OF CONTROLLED DEVICE
REMOTE	ANY OTHER LOCATION NOT LOCAL
ON	CB NORMALLY OPEN AUXILIARY CONTACT
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT
A	COMMON
T	TEST POSITION
S	SERVICE POSITION
CS	CLOSE IN SERVICE POSITION
CT	CLOSE IN TEST POSITION
LS	LOCAL SERVICE
LT	LOCAL TEST
LC	LOCAL CLOSE
LO	LOCAL OPEN
RO	REMOTE OPEN
OP	OPERATE
RE	RESET

NOTES

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING

PVC INSULATED 600V GRADE
 2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS
 2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS
 1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS
 2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS
 2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS
 FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:
 + SIGN FOR DC + WIRE
 - SIGN FOR DC - WIRE

LUGS

A. CT CIRCUITS- RING TYPE
 B. OTHER CIRCUITS - SPADE TYPE

FERULLING

YELLOW TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES (AS PER 31 - TMSS-1, RE.0)

AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		COMMON LEGEND				الشركة الوطنية لنقل الكهرباء National Grid sa			
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY				-	C421	CD-323005	SHT CONT.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				01			

NG/D2-D (2012/01)
 NGD200

DMS VECTOR

A

B

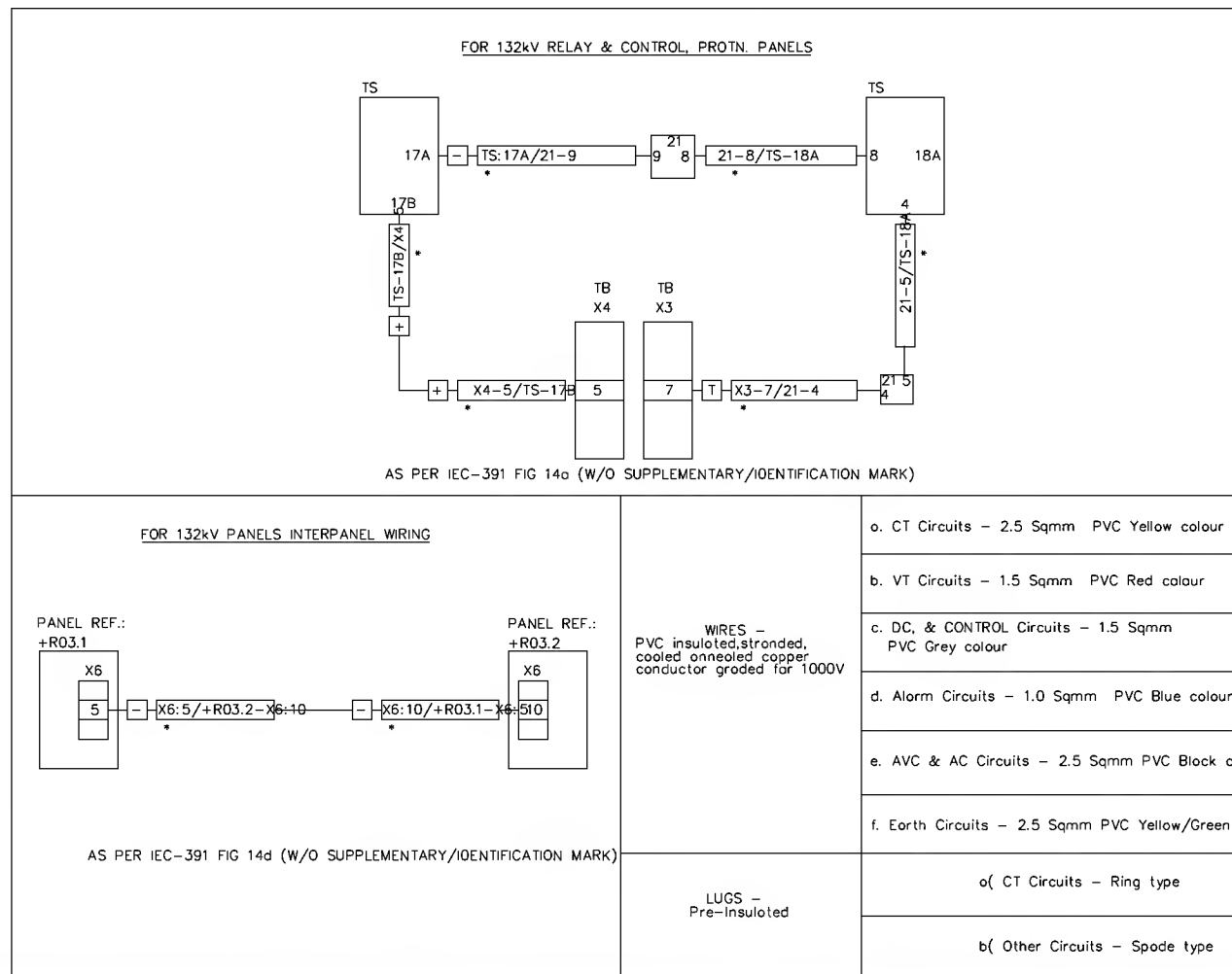
C

D



E

F

G



NOTE:1 ADDITIONAL MARKING AS APPLICABLE
NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE
3.2 mm for 1.5 sq mm wires and
4.2 mm for 2.5 sq mm wires
(As per 31-TMSS-1, REV 0)
NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY _____			DATE _____		CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		FERRULE AND WIRING DETAILS			الشركة الوطنية لنقل الكهرباء					نقل الكهرباء		National Grid sa				
01		13 49		FACTORY ASBUILT		DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3			INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.		
00		13 05		FOR APPROVAL		DATE STARTED 30.01.2013		DATE COMPLETED		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			-		C421		CD-323005		SHT 014		CONT. 015		
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH			SAUDI ARABIA									01	
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<div><div>DMS</div><div>VECTOR</div><div>NG/02-0 (2012/01)</div><div>NG0200</div></div>																							

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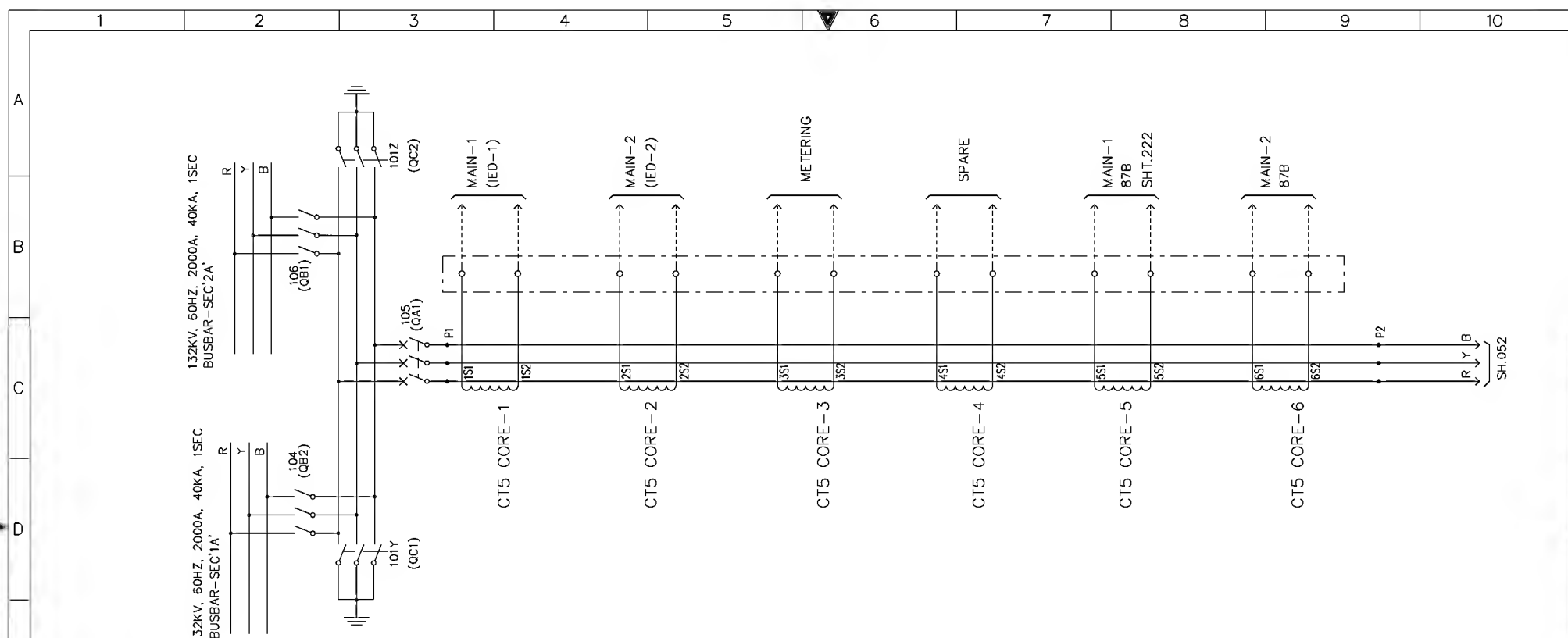
PROTECTION & SUBSTATION
AUTOMATION

MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
		SS 8709 13.8KV RELAY PANELS	
	CD-322952	13.8KV Capacitor Bank-1 Protection Panel	+C8P-1
	CD-322954	13.8KV Capacitor Bank-2 Protection Panel	+C8P-2
	CD-322956	13.8KV Capacitor Bank-2 Protection Panel	+CBP-3
	CD-322958	13.8 KV ACCS PANEL	+ACCS
	CD-322962	13.8KV ACSE PANEL	+ACSE
	CD-322968	13.8KV Under Voltage Load Shedding Panel	+UVLS
	CD-322964	13.8KV Under Frequency Load Shedding Panel-1	+UFLS01
	CD-322966	13.8KV Under Frequency Load Shedding Panel-2	+UFLS02

AS-BUILT by _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656			DRAWING REFERENCES		الشركة الوطنية لنقل الكهرباء National Grid sa						
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY					SHT CONT.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-323005	016 051	01

NG/D2-D (2012/01)
DMS VECTOR NGD200

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CT	RATIO	CLASS	VK IN VOLTS	IMAG @ VK IN mA	RCT IN (OHMS)	BURDEN IN VA	FUNCTION
CT5-1	300/1A	X	>360	≤50	≤1	-	MAIN-1(IED-1) TRAFO PROTN.
CT5-2	300/1A	X	>360	≤50	≤1	-	MAIN-2(IED-2) TRAFO PROTN.
CT5-3	300/1A	0.2Fs5	-	-	-	30	METERING
CT5-4	300/1A	5P20	-	-	-	30	SPARE
CT5-5	2000/1A	X	>600	≤25	≤5	-	87B MAIN-1
CT5-6	2000/1A	X	>600	≤25	≤5	-	87B MAIN-2

AS-BUILT BY _____ DATE _____ CONTRACT NO. 1113113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

PRIMARY SYSTEM (TRANSFORMER- GT2 BAY-D01)
 32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3
 S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
 RIYADH SAUDI ARABIA

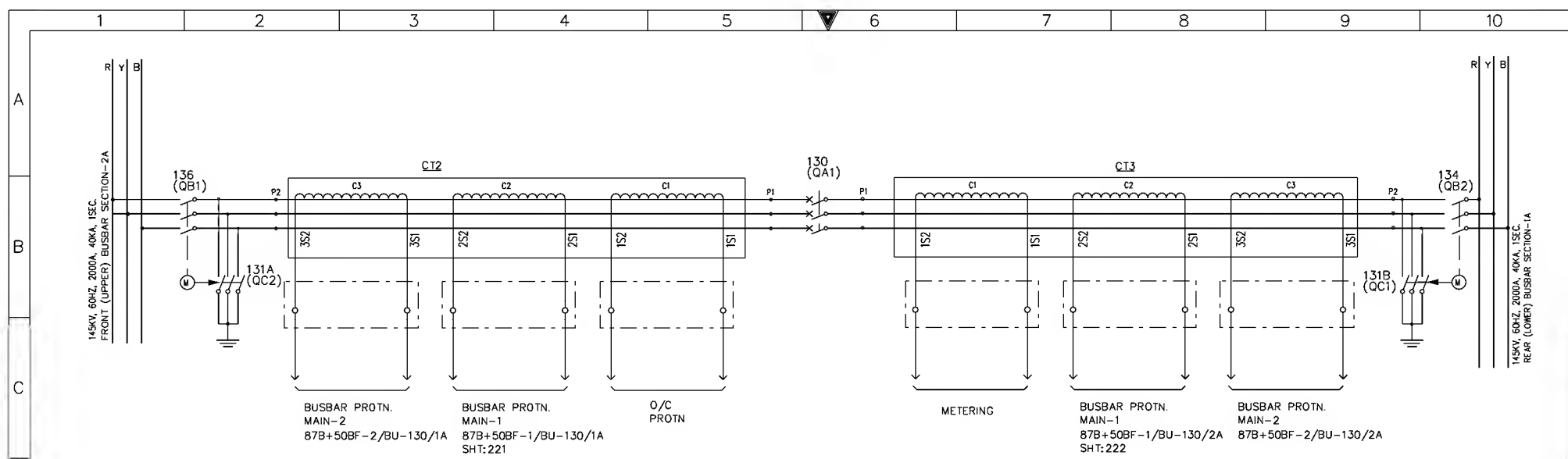
الشركة الوطنية لنقل الكهرباء



National Grid SA

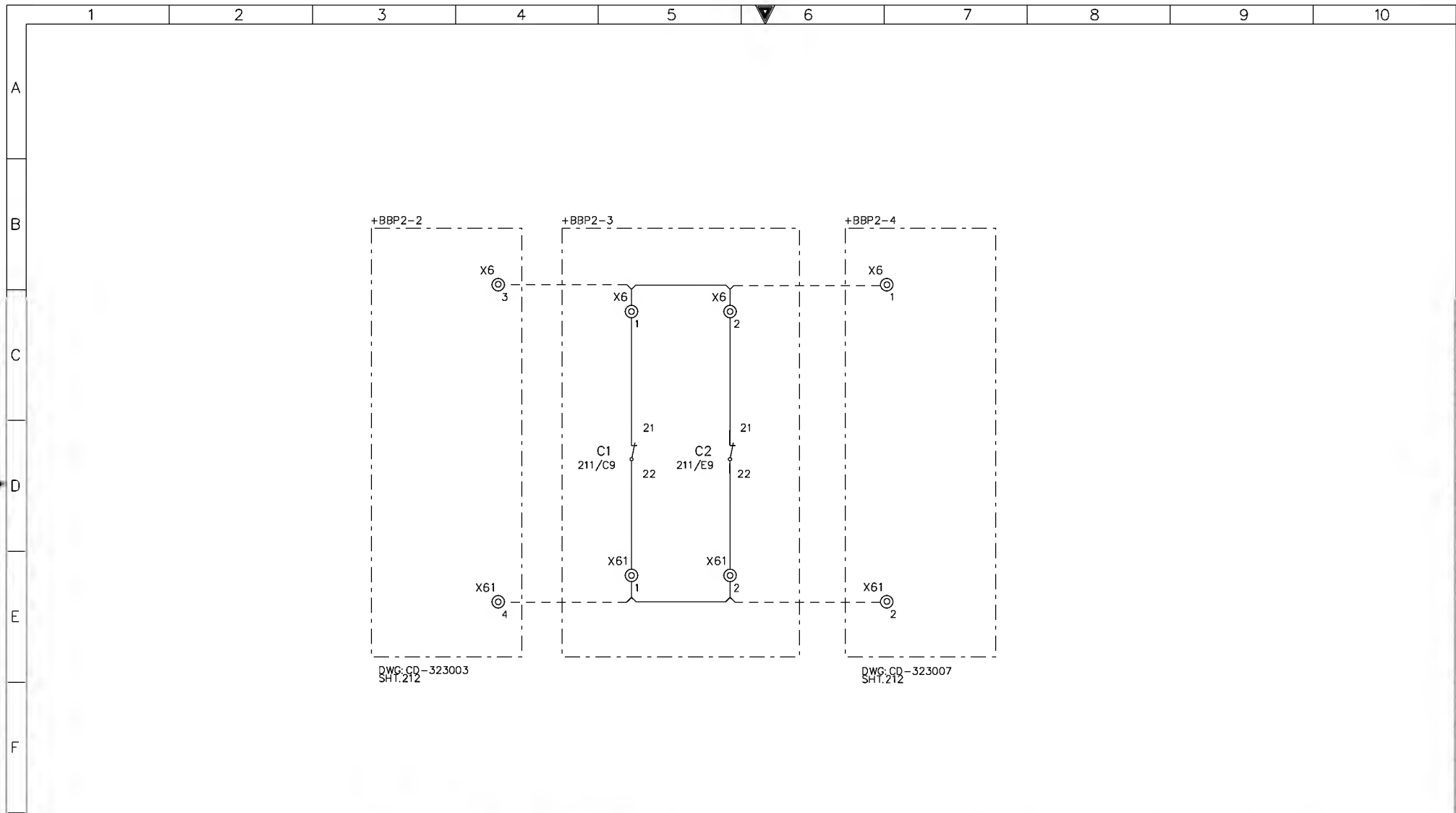
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323005	051 052	01

NG/D2-D (2012/01)
 DMS VECTOR NGD200



LOCATON OF GIS CT	CT	RATIO	CLASS	VK IN VOLT	Image IN mA @ VK	RCT IN OHMS	BURDEN IN VA	BURDEN IN VA
BUS 1A	CT3 CORE-1	2000/1A	0.2 ISF<10	--	--	--	30	CONTROL IEO (BCU) + METERING
	CT3 CORE-2	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+50BF-1/BU-130/2A MAIN-1
	CT3 CORE-3	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+50BF-2/BU-130/2A MAIN-2
BUS 2A	CT2 CORE-1	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	50+62BF+50/51+50/51N
	CT2 CORE-2	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+50BF-1/BU-130/1A MAIN-1
	CT2 CORE-3	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+50BF-2/BU-130/1A MAIN-2

AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	PRIMARY SYSTEM-BUS COUPLER 130		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01 13 49		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		National Grid sa			
00 13 05		DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER		SHEET NO. REV. NO.	
REV. NO. DATE DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421 CD-323005		053 211 01	
								NG/D2-0 (2012/01)	
								DMS VECTOR NGD200	



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

0113 49FACTORY ASBUILT

0013 05FOR APPROVAL

REV. NO. DATE DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED30.01.2013DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

CUB.LIGHTING,HEATER&SOKET ALARM CKT.

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

National Grid SA

INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.

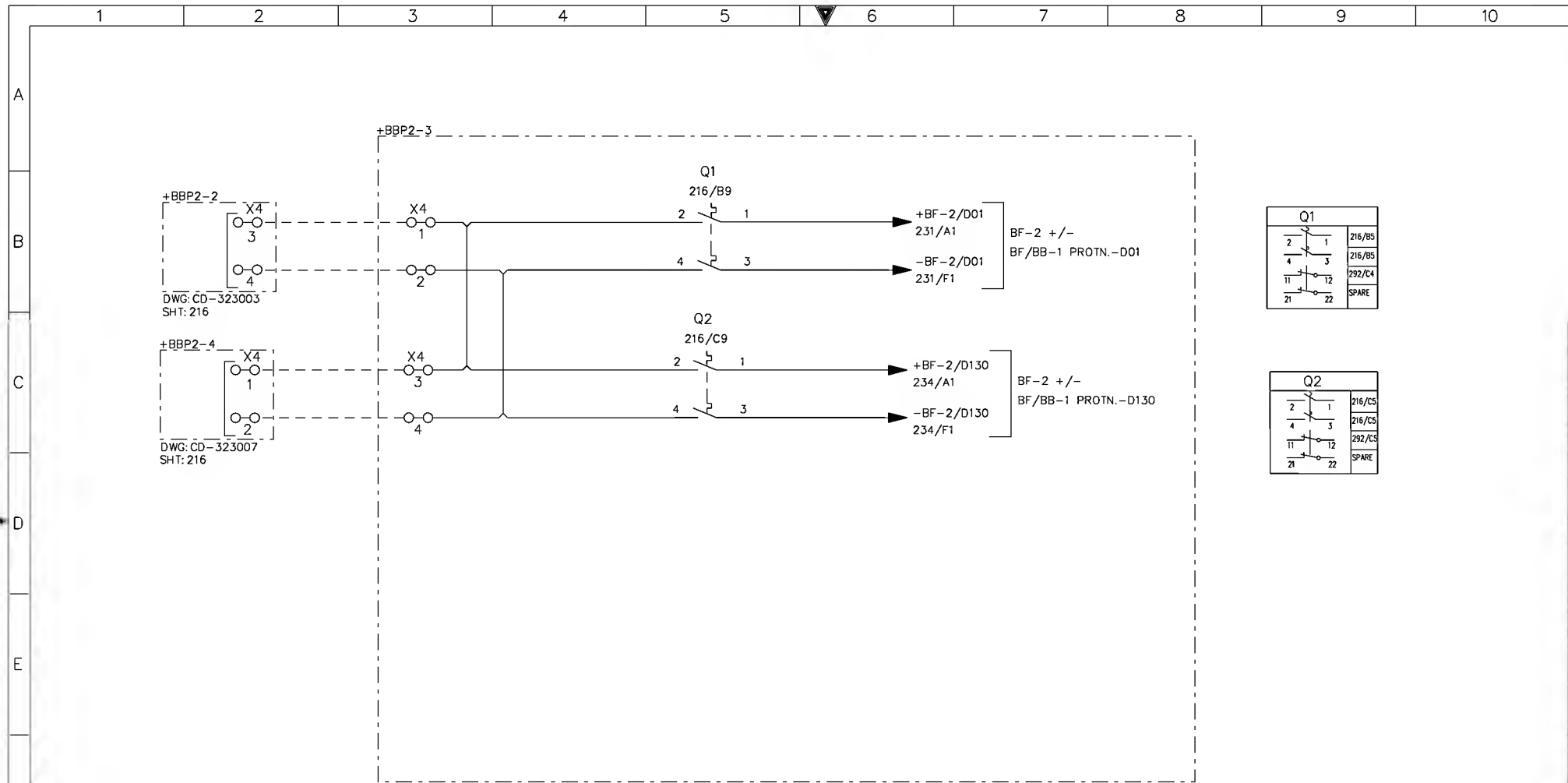
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NG/D2-0 (2012/01)

DMS VECTOR

NGD200

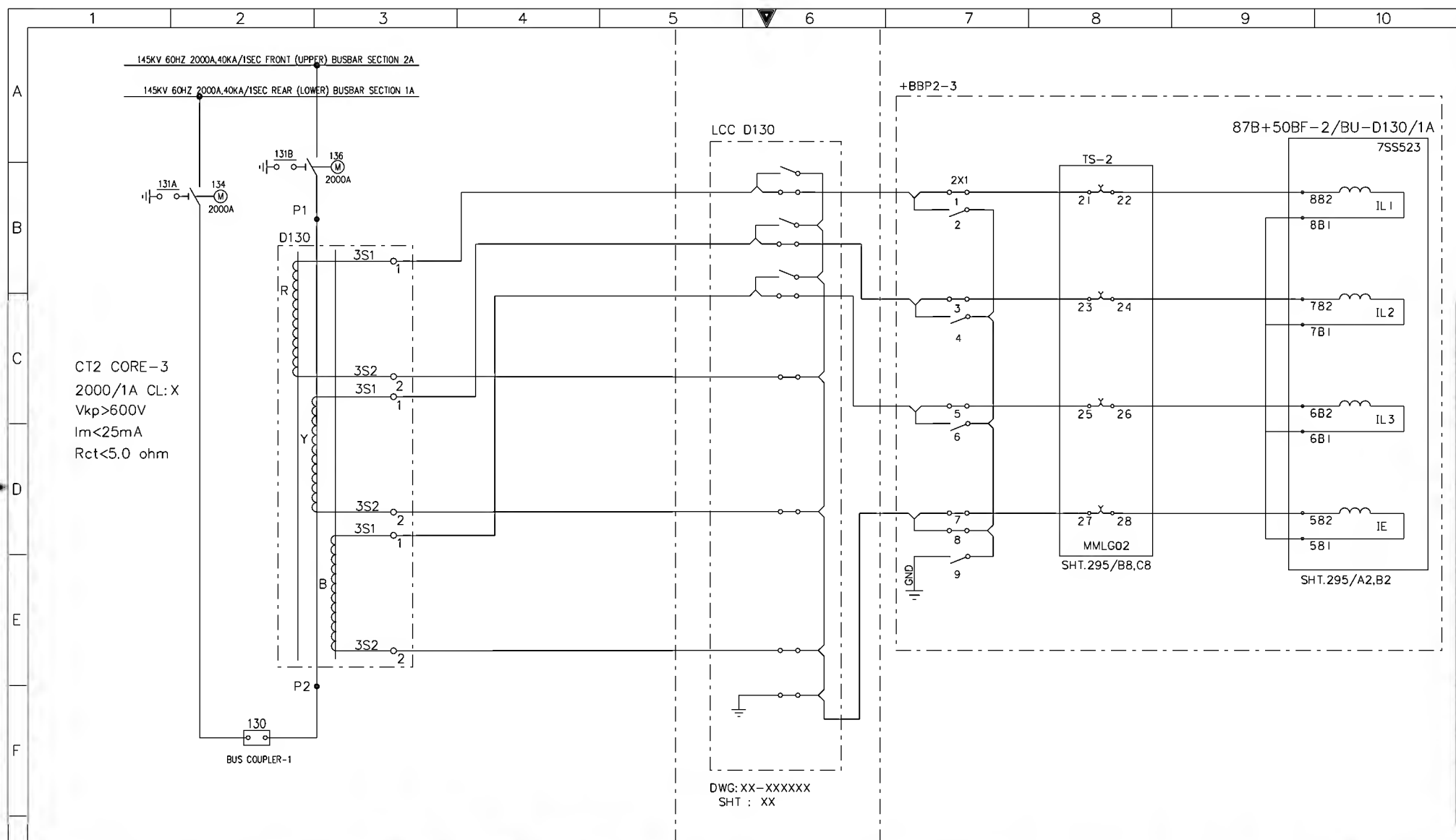
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	DC SUPPLY DISTRIBUTION		الشركة الوطنية لنقل الكهرباء		
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		National Grid sa		
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-323005
							SHEET NO.		REV. NO.
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NG/D2-D (2012/01)
DMS VECTOR NGD200

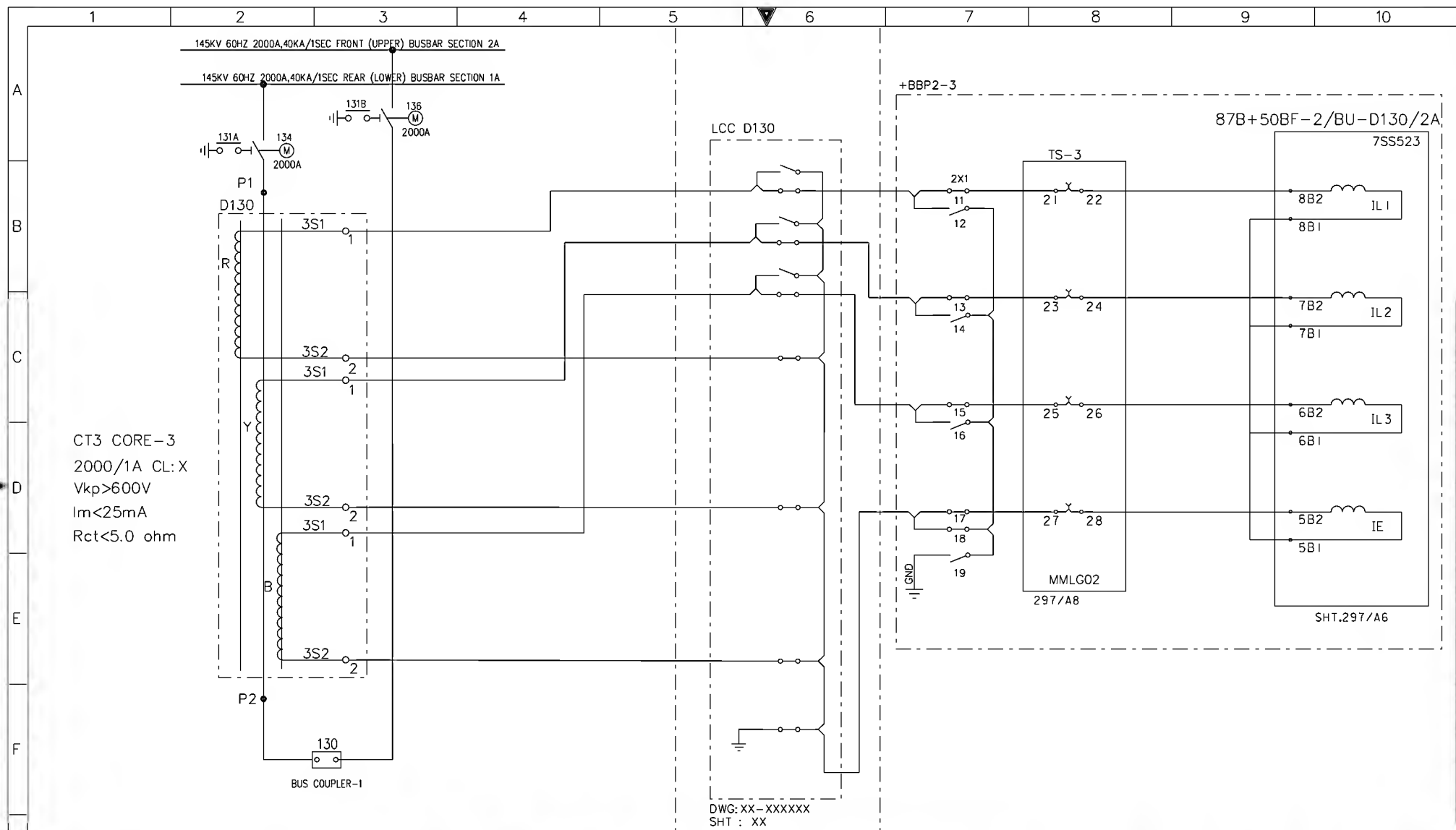
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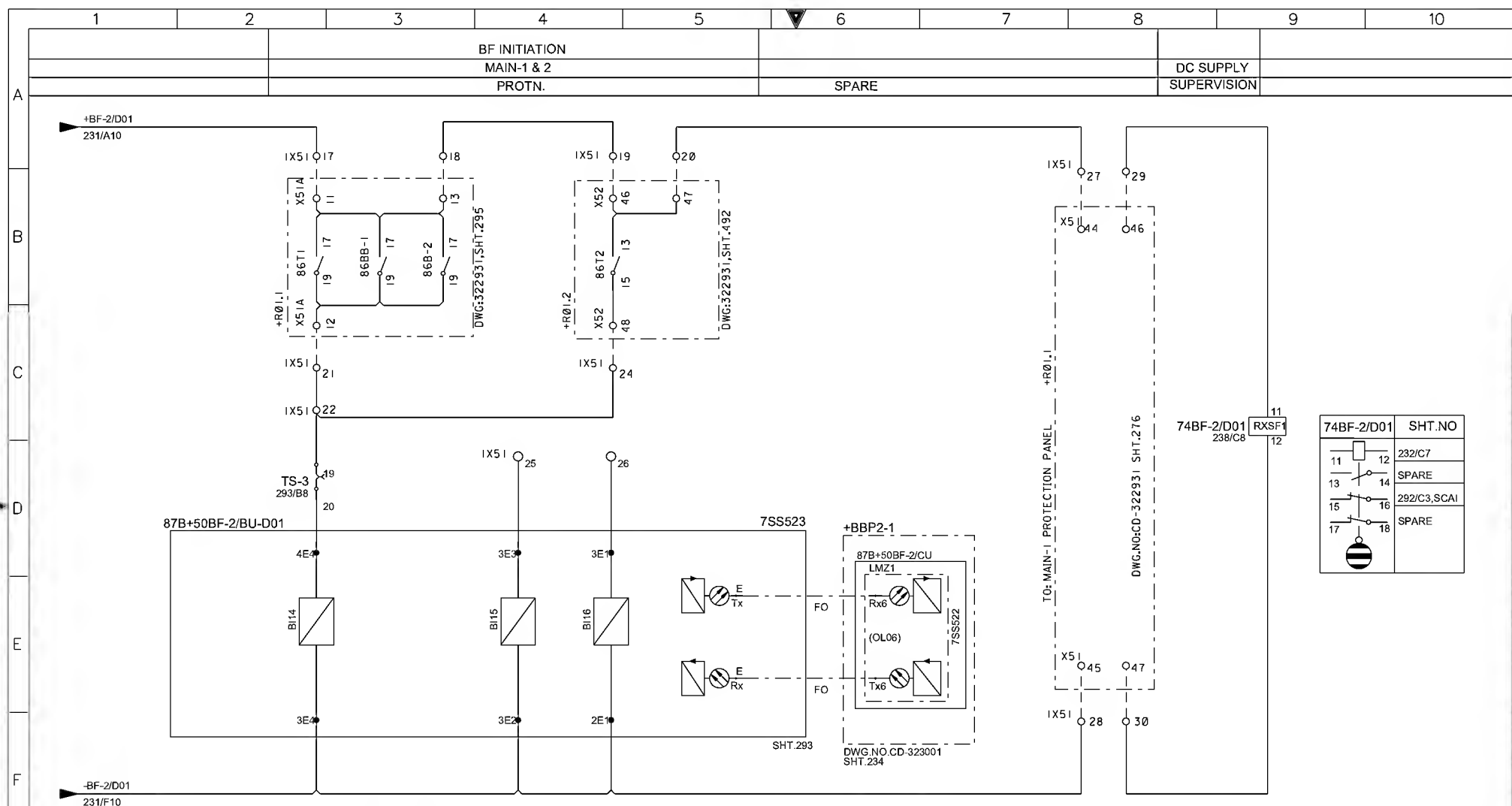
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D130/1A			<div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div> </div>		
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN, MAIN-2 BU PANEL +BBP2-3			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			-	C421	CD-323005	SHT CONT.	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA						222/223	

NG/D2-0 (2012/01)
DMS VECTOR NGD200

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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D130/2A		
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN, MAIN-2 BU PANEL +BBP2-3		
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		
							INDEX	PLANT NO.	DRAWING NUMBER
							-	C421	CD-323005
							SHEET NO.		REV. NO.
							SHT CONT.		01
							223/231		
							NG/D2-0 (2012/01)		
							DMS VECTOR NGD200		



74BF-2/D01	SHT.NO
11	232/C7
12	SPARE
13	292/C3, SCAI
14	SPARE
15	
16	
17	
18	

AS-BUILT BY

DATE

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

01

13 49

FACTORY ASBUILT

00

13 05

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 30.01.2013

DATE COMPLETED

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC

87B+50BF-2/BU-D01 PROTN. RELAY - BINARY INPUTS


132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

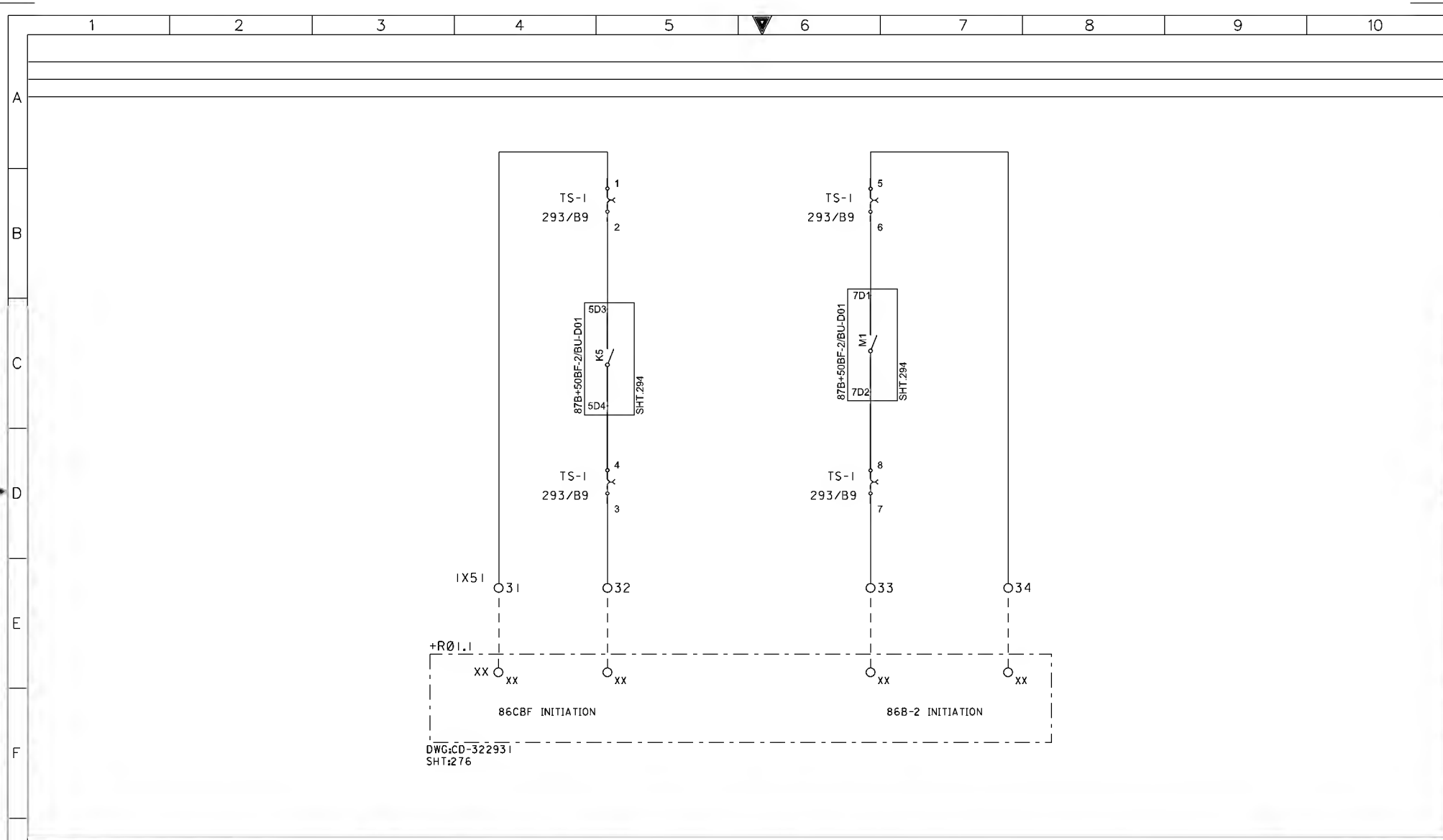
نقل الكهرباء

الشركة الوطنية لنقل الكهرباء



National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
			SHT CONT.	
-	C421	CD-323005	232 233	01



AS-BUILT BY

DATE

CONTRACT NO.

11131113/00

JOB ORDER NO.

S-13656

01

13 49

FACTORY ASBUILT

00

13 05

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY

RIZ

CHECKED BY

KVR

DATE STARTED

30.01.2013

DATE COMPLETED

OPRG. DEPT.

CTPD

ENG. DEPT.

AUT-PSAC

CBF + BUSBAR PROTN.-2 TRIP RELAY CIRCUIT -D01


132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

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National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

SHT

CONT.

REV. NO.

-

C421

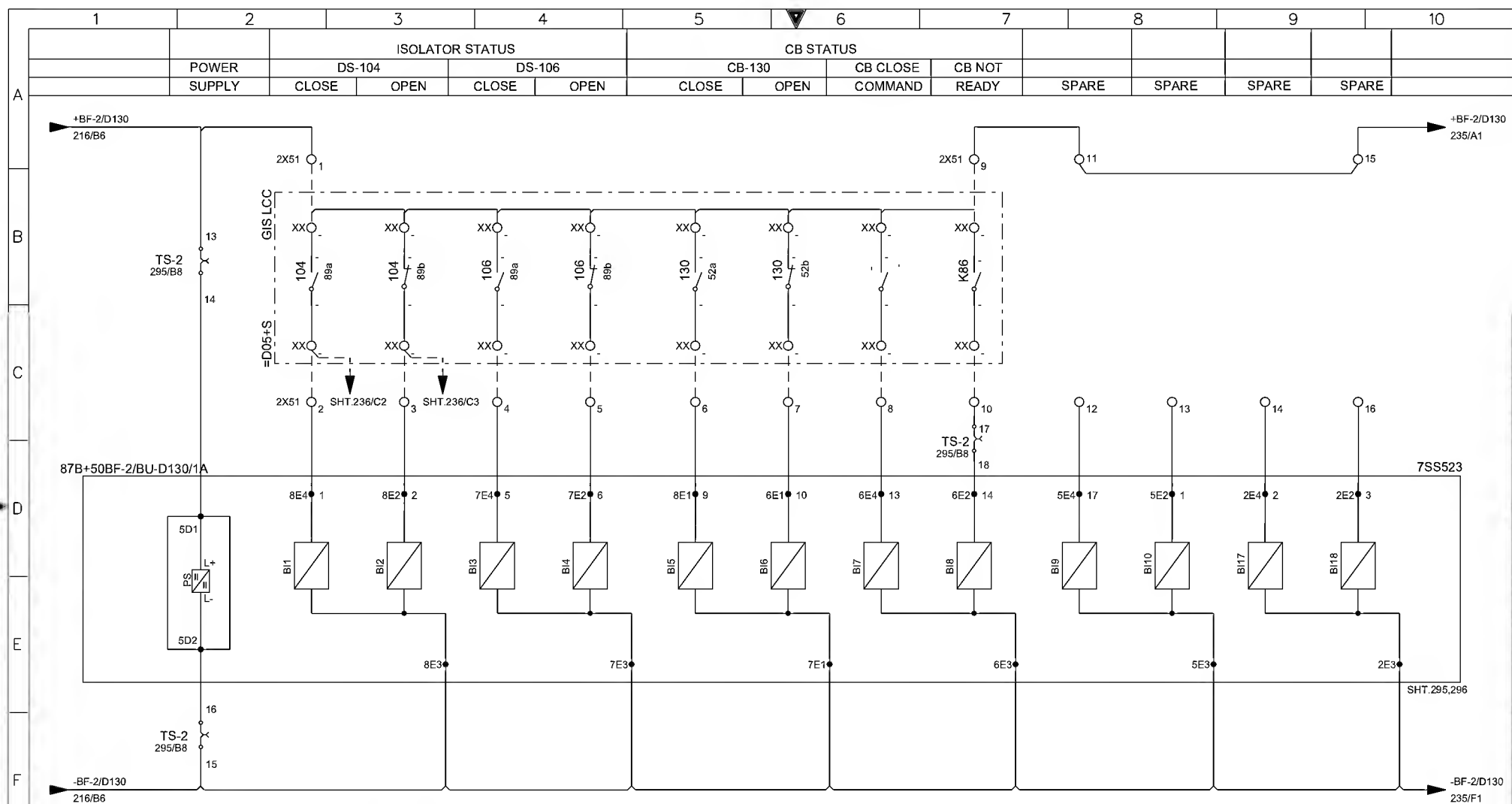
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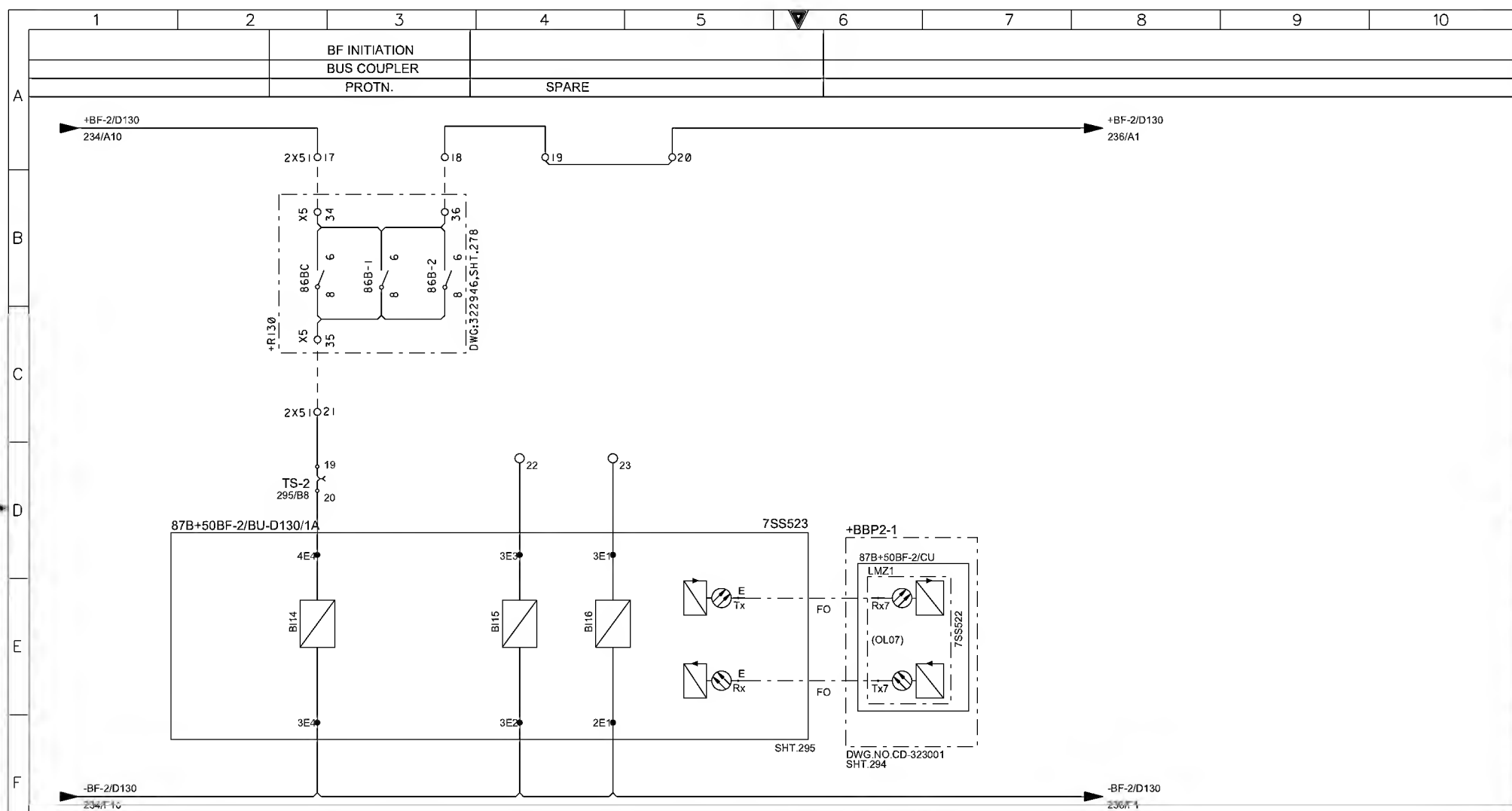
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
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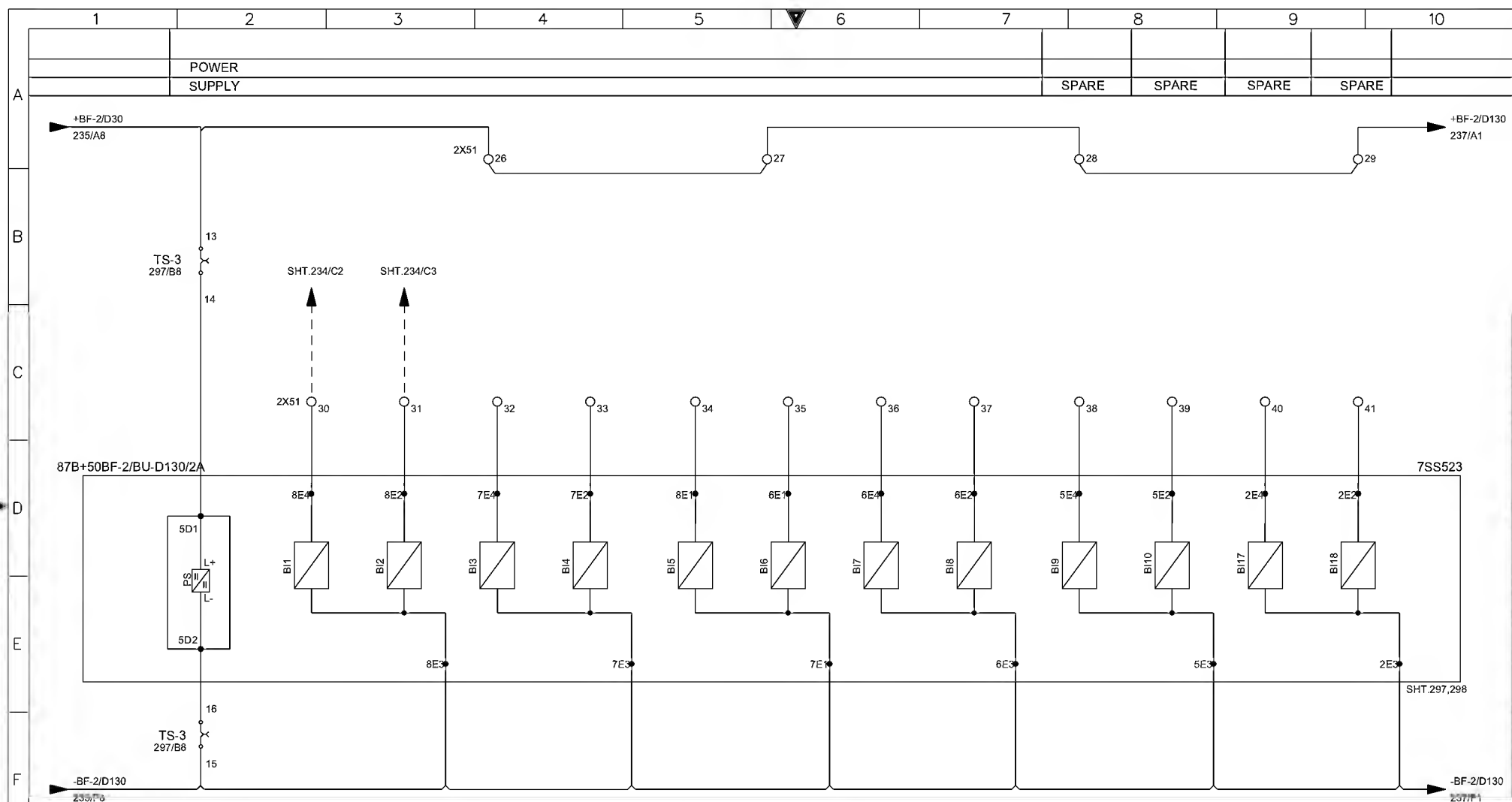


AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	87B+50BF-2/BU-D130/1A PROTN.RELAY - BINARY INPUTS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		National Grid sa			
00	13 05		DATE STARTED 30.01.2013 DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		- C421 CD-323005		234/235 01	



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	87B+50BF-2/BU-D130/1A PROTN.RELAY - BINARY INPUTS	<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div></div> <div>National Grid sa</div>							
				DRAWN BY RIZ CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3	INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.		
	01	13 49	FACTORY ASBUILT							SHT	CONT.		
	00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY							
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH	SAUDI ARABIA	-	C421	CD-323005	235	236	01

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AS-BUILT BY _____ DATE _____

CONTRACT NO. 1113113/00

JOB ORDER NO. S-13656

01

13 49

FACTORY ASBUILT

00

13 05

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 30.01.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

87B+50BF-2/BU-D130/2A PROTN.RELAY - BINARY INPUTS

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA



الشركة الوطنية لنقل الكهرباء



National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

-

C421

CD-323005

236/237

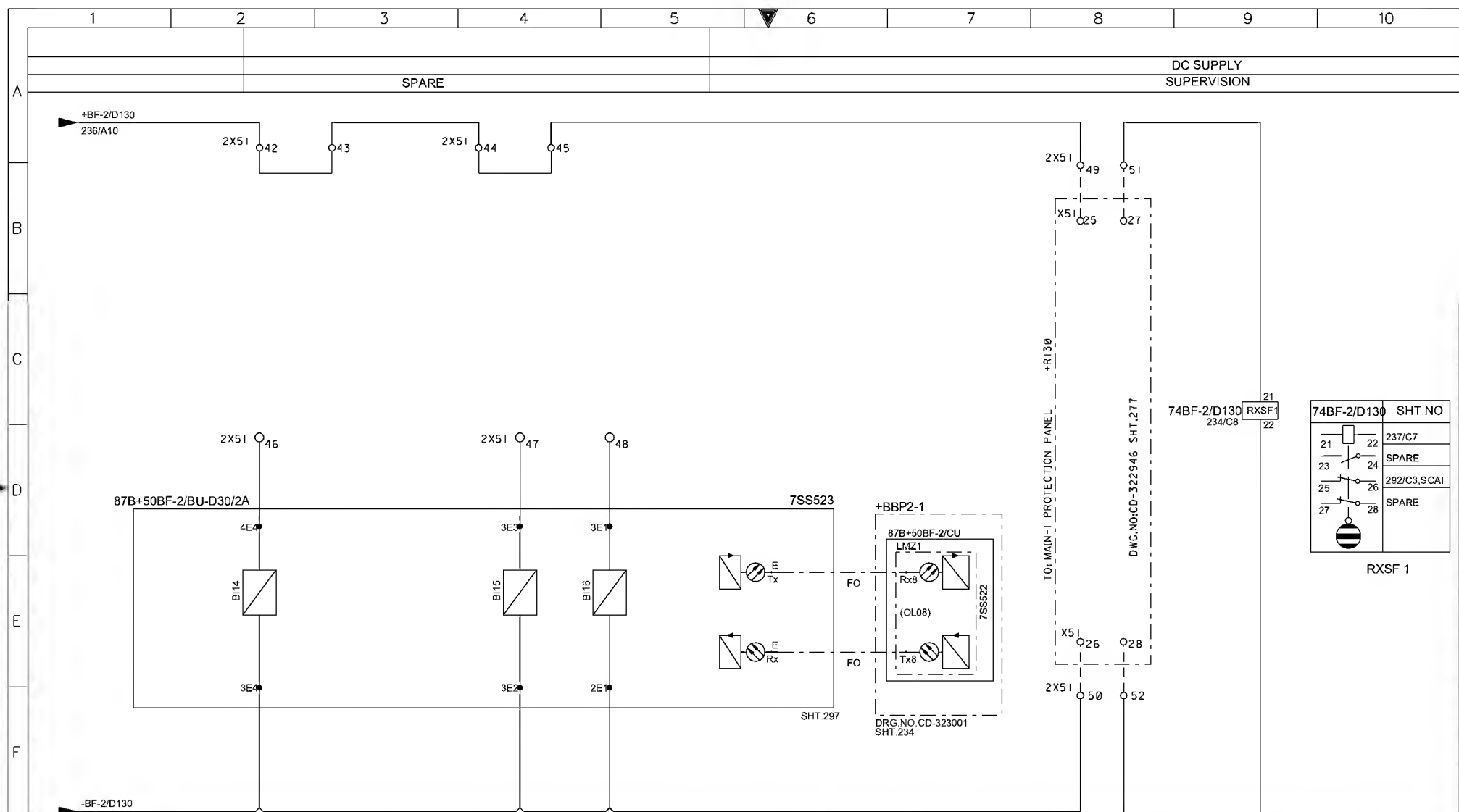
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NG/D2-D (2012/01)

DMS VECTOR

NGD200

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74BF-2/D130	SHT.NO
21	237/C7
22	SPARE
23	292/C3.SCAI
24	SPARE
25	
26	
27	
28	

RXSF 1

AS-BUILT BY _____ DATE _____ CONTRACT NO. 1113113/00 JOB ORDER NO. S-13656

01 13 49 FACTORY ASBUILT
00 13 05 FOR APPROVAL

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 30.01.2013 DATE COMPLETED _____

PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

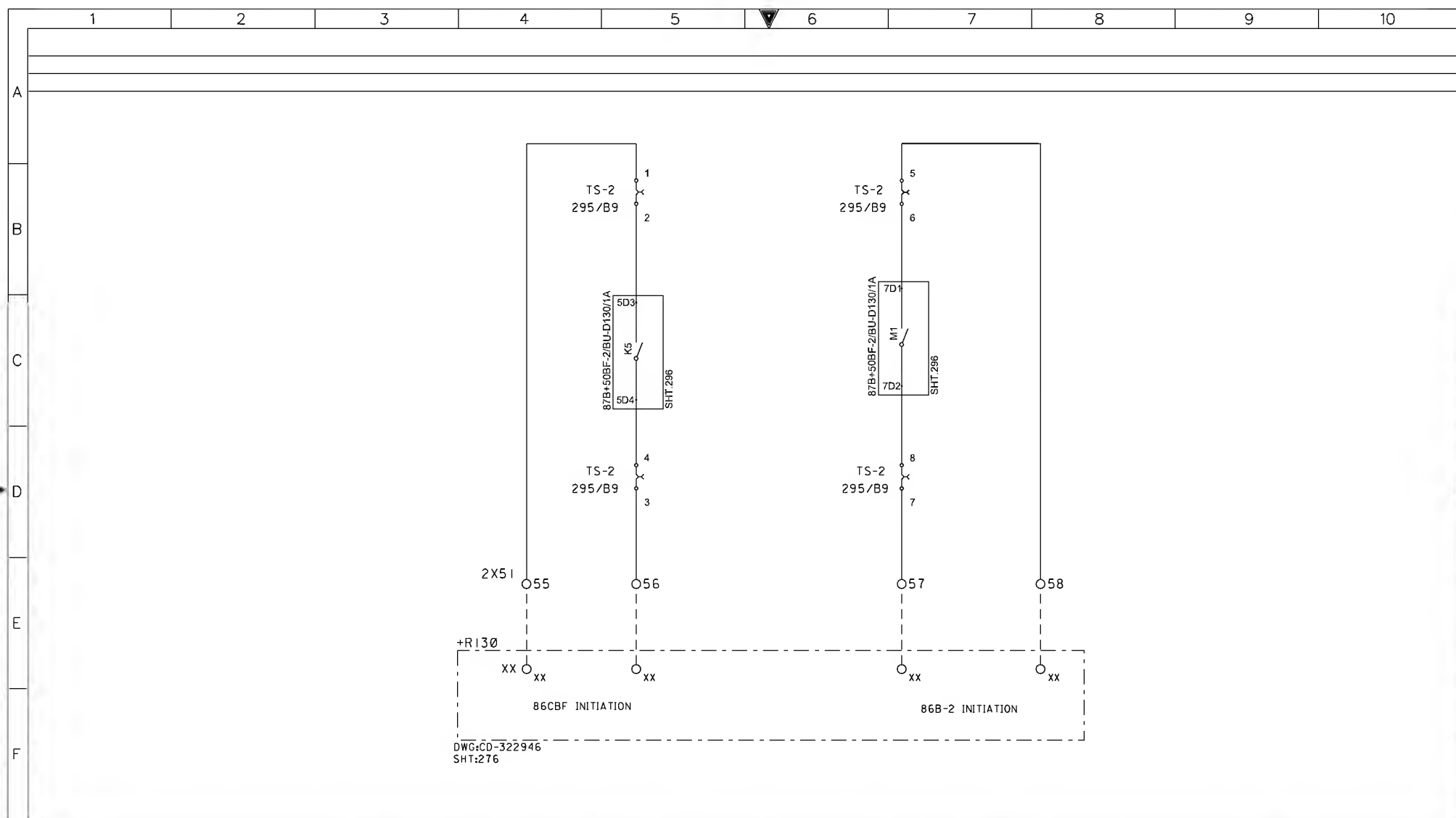
87B+50BF-2/BU-D130/2A PROTN.RELAY - BINARY INPUTS
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA


الشركة الوطنية لنقل الكهرباء

نقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323005	237/238	01

NG/D2-D (2012/01)
DMS VECTOR NGD200



AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		CBF + BUSBAR PROTEN-2 TRIP RELAY CIRCUIT -D130				<div><div>الشركة الوطنية لنقل الكهرباء</div><div></div><div>National Grid SA</div></div>			
G					DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3							
	01	13 49	FACTORY ASBUILT		DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY							
	00	13 05	FOR APPROVAL		OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC		RIYADH SAUDI ARABIA							
	REV. NO.	DATE	DESCRIPTION											

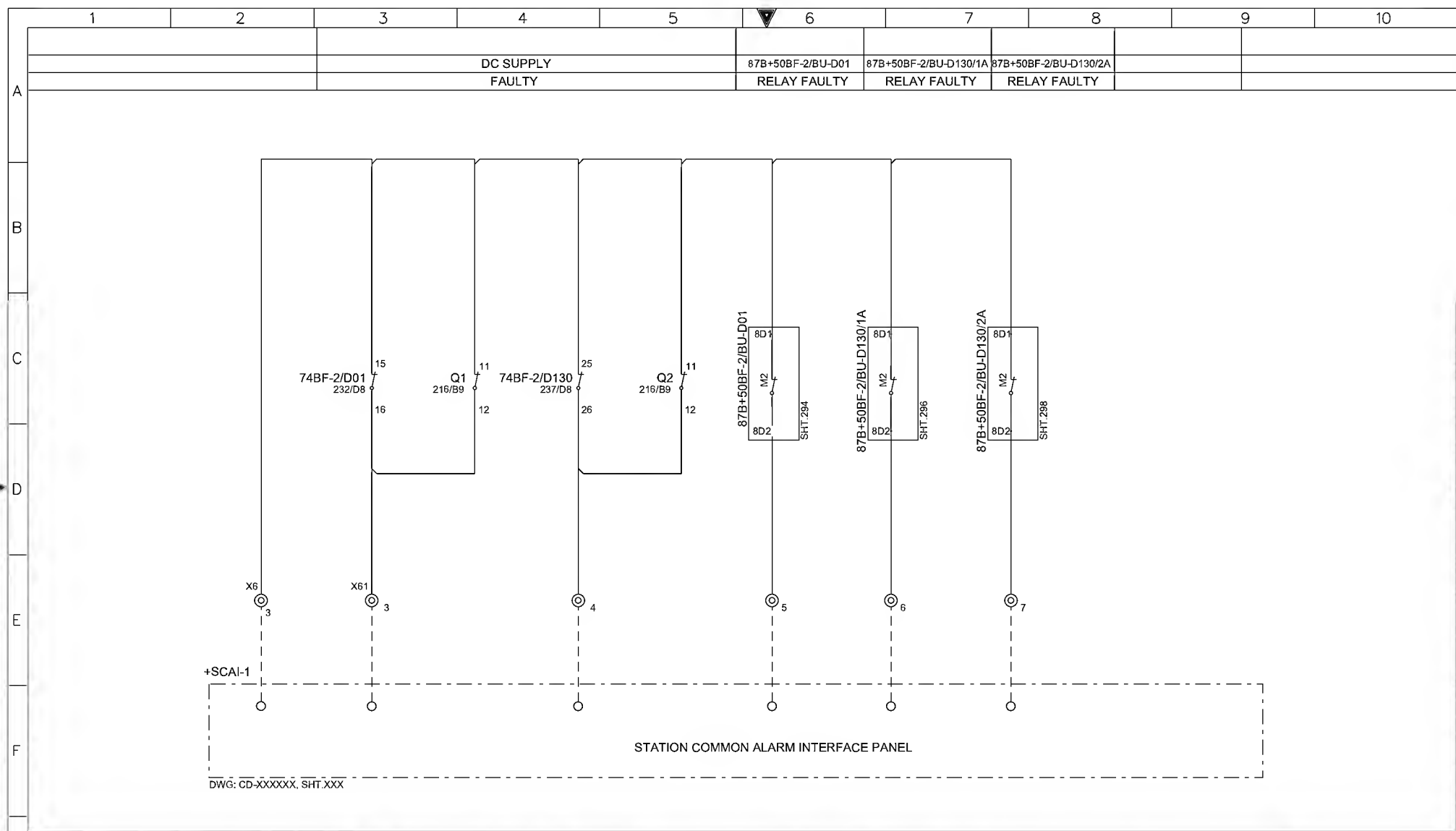
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VECTOR

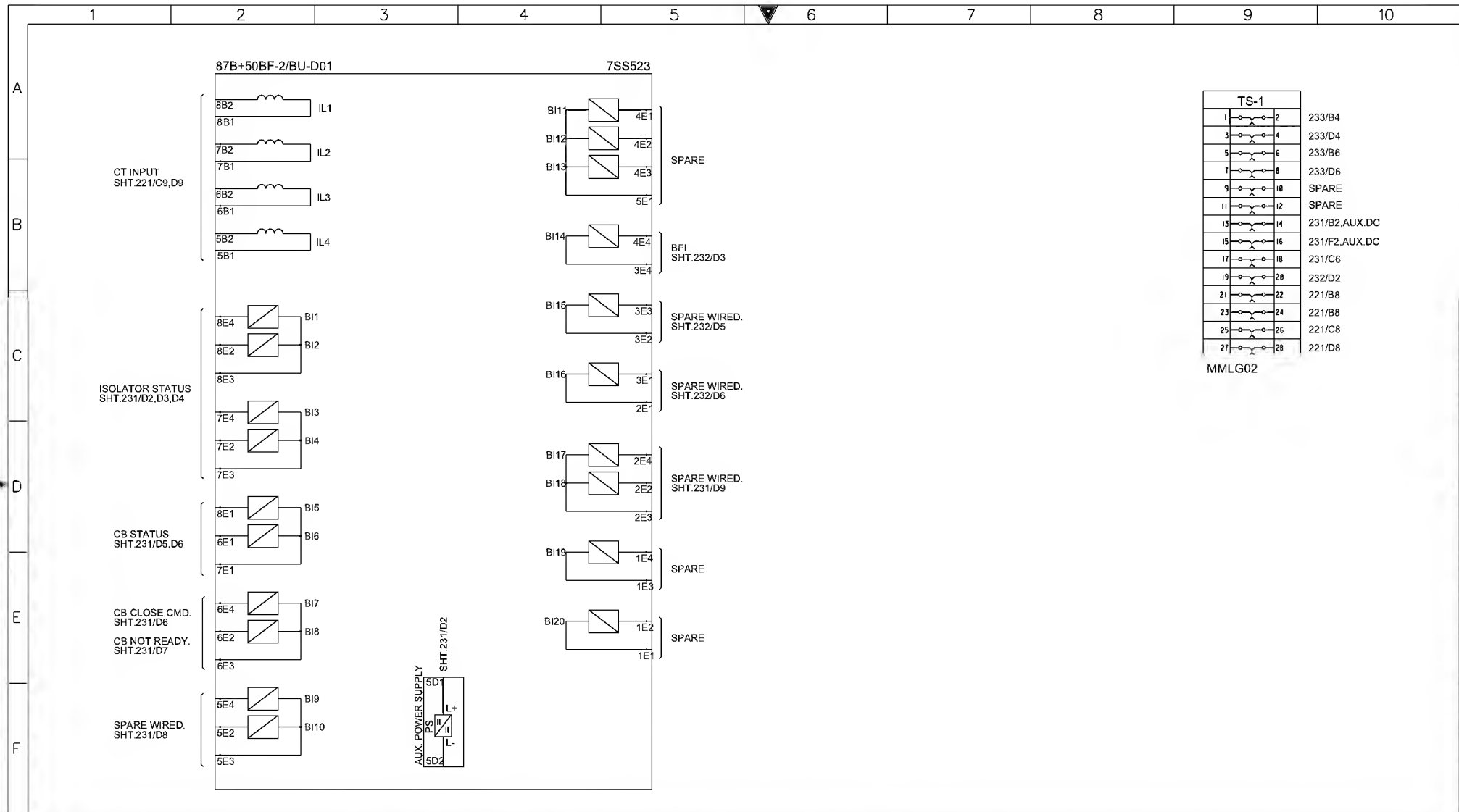
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NG/D2-D (2012/0

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AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		COMMON ALARM CIRCUITS		الشركة الوطنية لنقل الكهرباء			
DRAWN BY RIZ CHECKED BY KVR			DATE STARTED 30.01.2013		DATE COMPLETED _____		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		National Grid sa			
FOR APPROVAL			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		National Grid sa			
REV. NO. DATE DESCRIPTION			RIYADH		SAUDI ARABIA		INDEX PLANT NO. C421		DRAWING NUMBER CD-323005		SHEET NO. 292/293	
											REV. NO. 01	



TS-1	
1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22
23	24
25	26
27	28

233/B4
233/D4
233/B6
233/D6
SPARE
SPARE
231/B2,AUX.DC
231/F2,AUX.DC
231/C6
232/D2
221/B8
221/B8
221/C8
221/D8

MMLG02

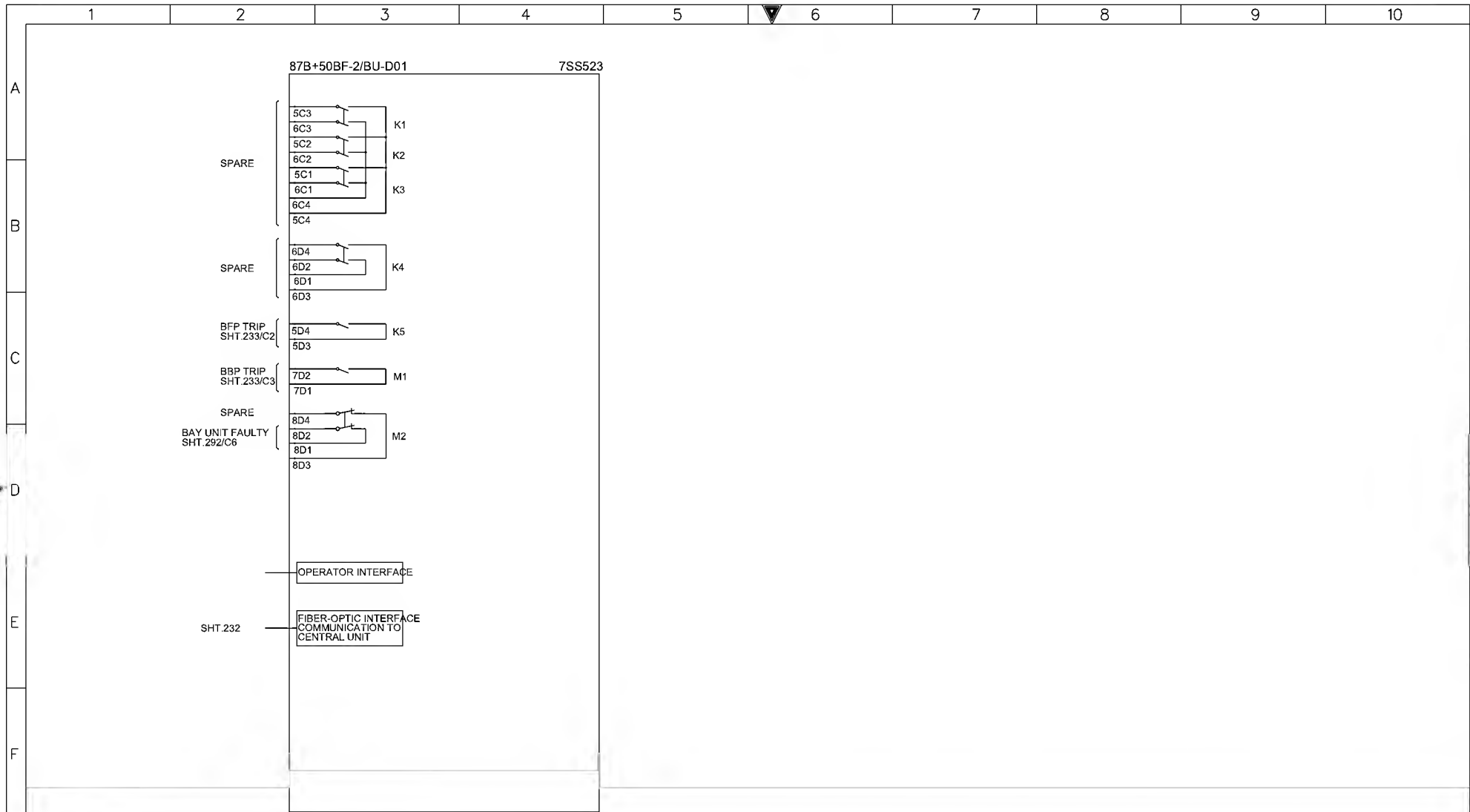
AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	87B+50BF-2/BU-D01 INTERNAL DIAGRAM		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 30.01.2013 DATE COMPLETED _____		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		INDEX		PLANT NO.	
DATE STARTED 30.01.2013 DATE COMPLETED _____		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.	
REV. NO.		DATE		DESCRIPTION		- C421		CD-323005	
01 13 49		FACTORY ASBUILT		FOR APPROVAL		293294		01	
00 13 05		FOR APPROVAL							

RIYADH SAUDI ARABIA

NG/D2-D (2012/01)

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AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01 13 49 FACTORY ASBUILT
00 13 05 FOR APPROVAL

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 30.01.2013 DATE COMPLETED

PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

87B+50BF-2/BU-D01 INTERNAL DIAGRAM

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH

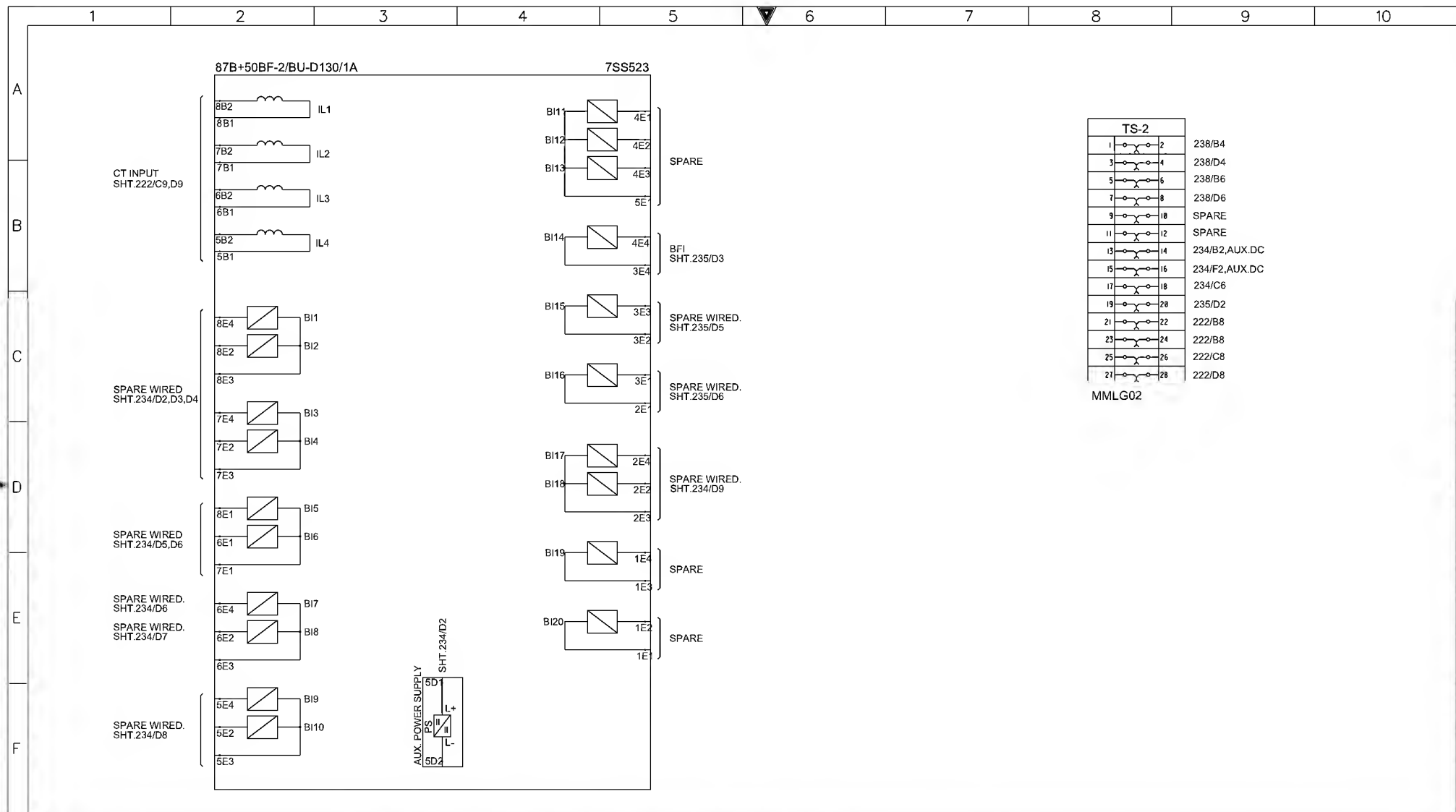
SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323005	SHT CONT. 294/295	01

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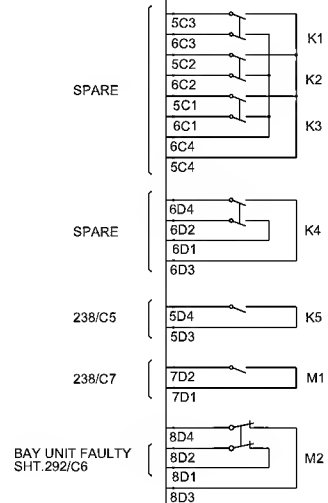
DMS VECTOR NGD200



AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	87B+50BF-2/BU-D130/1A INTERNAL DIAGRAM		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 30.01.2013 DATE COMPLETED _____		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		National Grid sa			
DATE STARTED 30.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-323005	SHT CONT 295 296	01	
REV. NO. DATE DESCRIPTION		DMS VECTOR		NG/D2-D (2012/01)		NGD200			

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87B+50BF-2/BU-D130/1A 7SS523



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

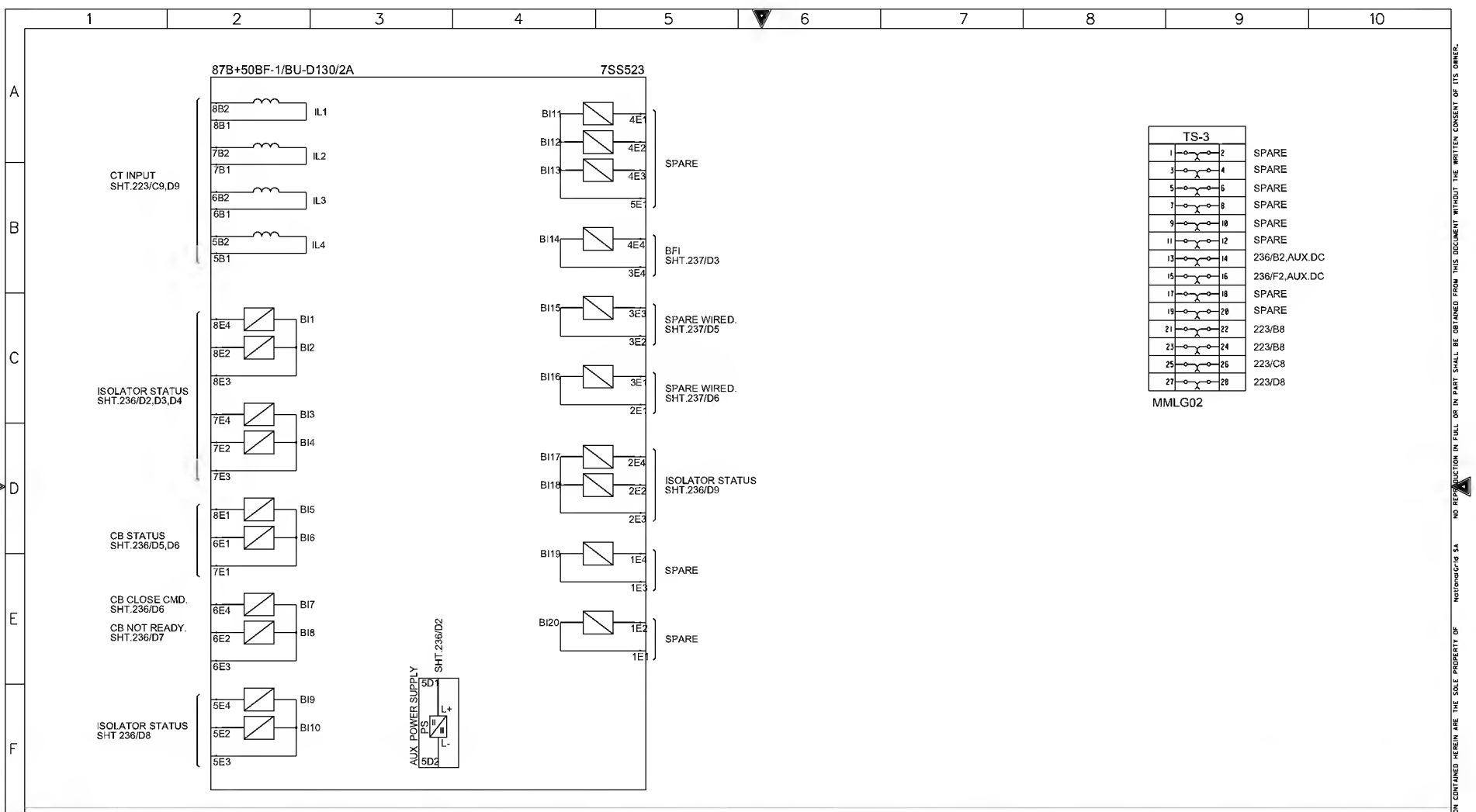
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00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

87B+50BF-2/BU-D130/1A INTERNAL DIAGRAM
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid SA

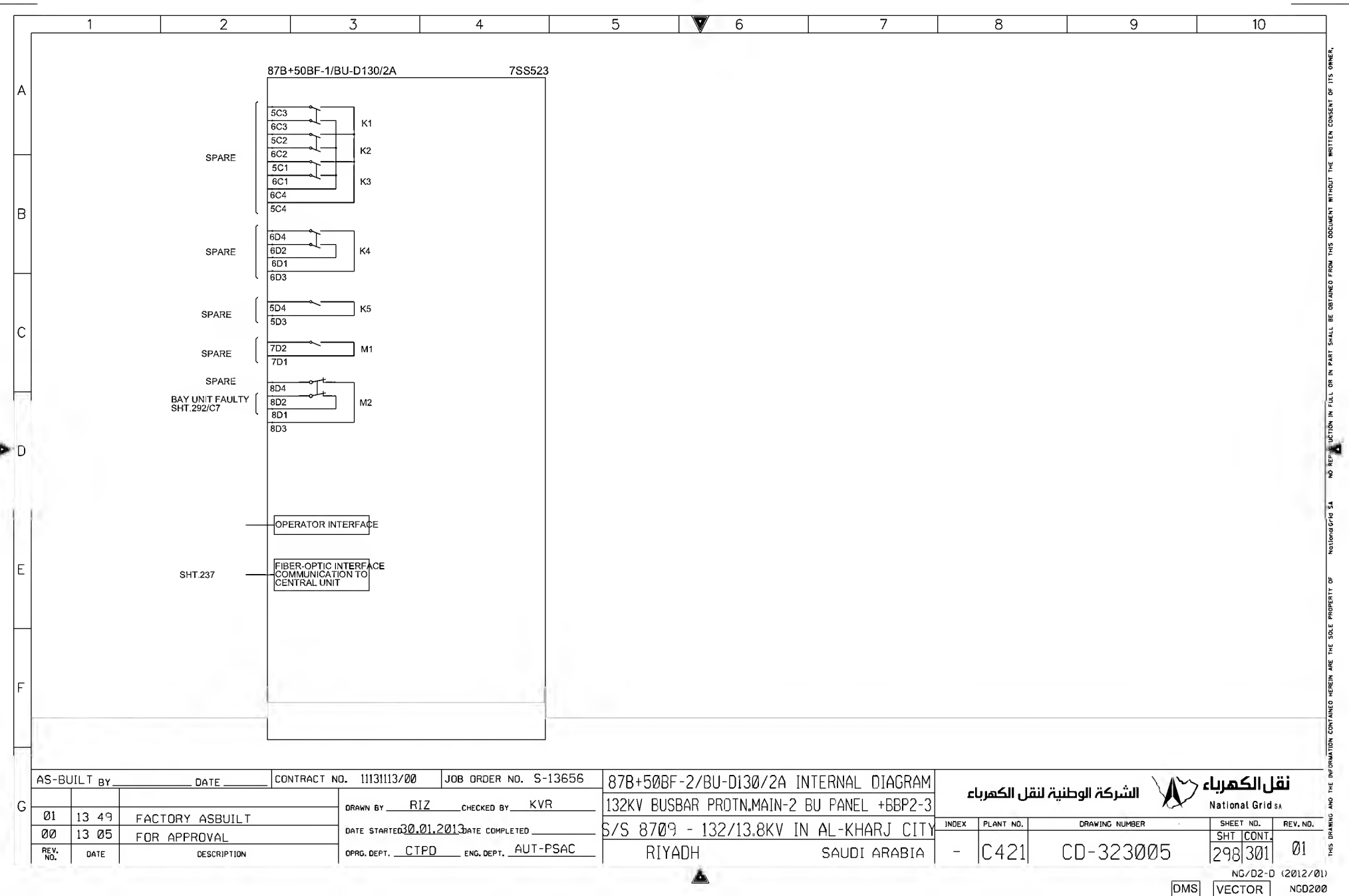
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323005	SHT CONT. 296/297	01

NG/D2-0 (2012/01)
DMS VECTOR NGD200



AS-BUILT BY		DATE	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	87B+50BF-2/BU-D130/2A INTERNAL DIAGRAM		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01		13 49	FACTORY ASBUILT		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3		National Grid SA			
00		13 05	FOR APPROVAL		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX		REV. NO.	
REV. NO.		DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		PLANT NO. C421		DRAWING NUMBER CD-323005	
					RIYADH SAUDI ARABIA				SHEET NO. 297/298	
									CONT. 01	
									NG/D2-D (2012/01)	
									DMS VECTOR	
									NCD200	

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AS-BUILT BY _____		DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 05	FOR APPROVAL	DATE STARTED 30.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

87B+50BF-2/BU-D130/2A INTERNAL DIAGRAM	
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-3	
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء

National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323005	SHT. 298 CONT. 301	01

NG/D2-0 (2012/01)

DMS VECTOR

NGD200

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